

## ICD作動時に心室波高値が著しく低下し作動様式の解析が困難であった一症例

加古川東市民病院 臨床工学室  
三木 悠資

- 1) 患者背景  
76歳 男性。陳旧性心筋梗塞を合併した持続性心室頻拍(VT)。
- 2) 適応経緯  
2008年VTに対してカテーテルアブレーションを施行するが、不成功であり、同年にICD埋め込みを施行した。
- 3) デバイス情報  
2008年ICD左前胸部埋め込み  
BostonScientific社製 本体:VITALITY DR / 1871  
A Lead:FINELINE II / 4480 RV Lead:ENDOTAK / 0155  
2014年 BostonScientific社製 ENERGEN / F143へ電池交換
- 4) フォロー経過  
2015年3月ICD作動を認め当科救急受診。ICD checkでは、VTでの作動を認め、意識下に抗頻拍ペーシング、ショック共に7回ずつ行われていた。心内波高は初回ショック後1mV以下と極度に低下し様々な作動様式が考えられた。洞調律中の心内波高は18.0mV以上で安定していた。  
その他、異常所見は見当たらなかった。
- 5) その他特記事項  
2008年新規ICD埋め込み術では右室心尖部の波高値は低く前壁側のリード留置となっている。
- 6) 論点  
ICD作動様式の解析、心室波高値の極度の低下要因と対応について議論したい。

※「Device Parameter」「Episode」「胸部レントゲン」は以下に示す。  
※EpisodeのRV心内波高は実際では評価困難なため倍増した波形を示す。  
Event記録時間が長時間のため一部省略。

# デバイス設定

**ZOOM @ View™**  
Device Settings Report

Report Created 03 Mar 2015

Device: ENERGEN ICD F143/103179  
Tachy Mode: Monitor - Therapy

Last Office Interrogation: 22 Jan 2015  
Implant Date: 26 Nov 2014

**Programming**  
Last Programmed: 02 Dec 2014  
Ventricular Tachy Mode: 03 Mar 2015 Changed to Monitor - Therapy  
03 Mar 2015 Changed to Monitor Only  
03 Mar 2015 Changed to Off  
26 Nov 2014 Changed to Monitor - Therapy

**Ventricular Tachy**  
VF 190 min<sup>-1</sup> (316 ms)  
Detection/Redetection: 1.0 s  
Initial Duration: 1.0 s  
Redetection Dur: 1.0 s  
Post-shock Dur: 1.0 s  
Therapy: QUICK CONVERT™ ATP On  
Shock 1: 41 J  
Shock 2: 41 J  
Additional 41 J Shocks: 6

VT 150 min<sup>-1</sup> (400 ms)  
Detection/Redetection: 3.5 s  
Initial Duration: 3.5 s  
ATP1: Number of Bursts 5  
Ramp: 5

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**ZOOM @ View™**  
Device Settings Report

03 Mar 2015 17:4

**Ventricular Tachy (Continued)**  
VT 150 min<sup>-1</sup> (400 ms)  
Detection/Redetection: 1.0 s  
Redetection Dur: 1.0 s  
Post-shock Dur: 1.0 s  
Enhancements: Rhythm ID On  
VT Detection: On  
Initial Detection: On  
Sustained Rate Duration: 03:00 mm:ss  
Post-Shock Detection: Off  
Rhythm ID Setup: On  
Passive Method: On  
Active Method: On  
Temporary LRL: 50 min<sup>-1</sup>  
Common Parameters: Atrial Tachy Discrimination On, AFib Rate Threshold 170 min<sup>-1</sup>, Stability 20 ms

ATP1: Pulses per Burst Initial 10, Increment 0, Coupling Interval 81%, Decrement 0 ms, Burst Cycle Length 81%, Ramp Decrement 10 ms, Scan Decrement 0 ms, Minimum Interval 200 ms  
ATP2: Number of Bursts 5, ATP Time-out Shocks 01:00 mm:ss  
Shock 1: 41 J, Shock 2: 41 J, Shock 3-6: 41 J

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**ZOOM @ View™**  
Device Settings Report

03 Mar 2015 17:42

**Ventricular Tachy (Continued)**  
VT-1 130 min<sup>-1</sup> (462 ms)  
Detection/Redetection: 1.0 s  
Redetection Dur: 1.0 s  
Post-shock Dur: 1.0 s  
Enhancements: Rhythm ID On  
VT-1 Detection: On  
Initial Detection: On  
Sustained Rate Duration: 30:00 mm:ss  
Post-Shock Detection: Off  
Rhythm ID Setup: On  
Passive Method: On  
Active Method: On  
Temporary LRL: 50 min<sup>-1</sup>  
Common Parameters: Atrial Tachy Discrimination On, AFib Rate Threshold 170 min<sup>-1</sup>, Stability 20 ms

ATP1: Pulses per Burst Initial 10, Increment 0, Coupling Interval 81%, Decrement 0 ms, Burst Cycle Length 81%, Ramp Decrement 10 ms, Scan Decrement 0 ms, Minimum Interval 200 ms  
ATP2: Number of Bursts 3, ATP Time-out Shocks 01:00 mm:ss  
Shock 1: 41 J, Shock 2: 41 J, Shock 3-5: 41 J

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**ZOOM @ View™**  
Device Settings Report

03 Mar 2015 17:4

**Ventricular Tachy (Continued)**  
VT-1 130 min<sup>-1</sup> (462 ms)  
Detection/Redetection: 4.0 s  
Initial Duration: 4.0 s  
ATP1: Number of Bursts 5  
Ramp: 5

**Ventricular Tachy Therapy Setup**  
ATP: Ventricular ATP Amplitude 7.5 V, Waveform Biphasic, Ventricular ATP Pulse Width 1.0 ms, Committed Shock Off, Magnat and Beep Reversed, Magnat Response Inhibit Therapy, Shock Lead Vector RV Coil to RA, Beep During Capacitor Charge Off, Shock Lead Vector Coil and Can

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**ZOOM @ View™**  
Device Settings Report

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**Atrial Tachy**  
Therapy: ATR Mode Switch Details On, ATR Mode Switch 170 min<sup>-1</sup>, Trigger Rate 8 cycles, Duration 8 cycles, Entry Count 8 cycles, Exit Count 8 cycles, Fallback Mode VDI, Time 00:30 mm:ss, ATR/VTR Fallback LRL 70 min<sup>-1</sup>, Ventricular Rate Regulation On, Maximum Pacing Rate 110 min<sup>-1</sup>

Atrial Tachy Response: Atrial Flutter Response Off, PMT Termination On

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**ZOOM @ View™**  
Device Settings Report

03 Mar 2015 17:4

**Brady**  
Normal Settings: Mode RHYTHMIO™, Output 2.5 V @ 0.4 ms, 5.5 V @ 0.4 ms, Sensitivity AGC 0.25 mV, AGC 0.6 mV, Leads Pace/Sense Bipolar, Sense Bipolar, Sensor Accelerometer On, Response Factor 8, Activity Threshold Medium, Reaction Time 30 s, Recovery Time 2 min

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**ZOOM @ View™**  
Device Settings Report

03 Mar 2015 17:42

**Brady (Continued)**  
Normal Settings: Rate Enhancements Up Off %, Down Off %, Sensor Respiratory Sensor Off, Post Therapy Post Therapy Period 00:30 mm:ss

Brady (Post-Therapy) Settings: Lower Rate Limit 70 min<sup>-1</sup>, Output ●A 5.0 V @ 1.0 ms, ■V 7.5 V @ 1.0 ms

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**ZOOM @ View™**  
Device Settings Report

03 Mar 2015 17:4

**Setup**  
Beeper: Beep when Explant is Indicated On  
Telemetry: Enable use of ZIP™ telemetry On  
Trending Setup: Recording Method 30 Second Average, Duration 25 hours, Data Storage Continuous  
Leads Status Setup: Daily Intrinsic Amplitude On, Daily Impedance On, Impedance Limits Low High, Beep When Out-of-Range Off

●A Pace/Sense On On 200 - 2000 Ω Off  
■V Pace/Sense On On 200 - 2000 Ω Off  
Shock On On 20 - 125 Ω Off

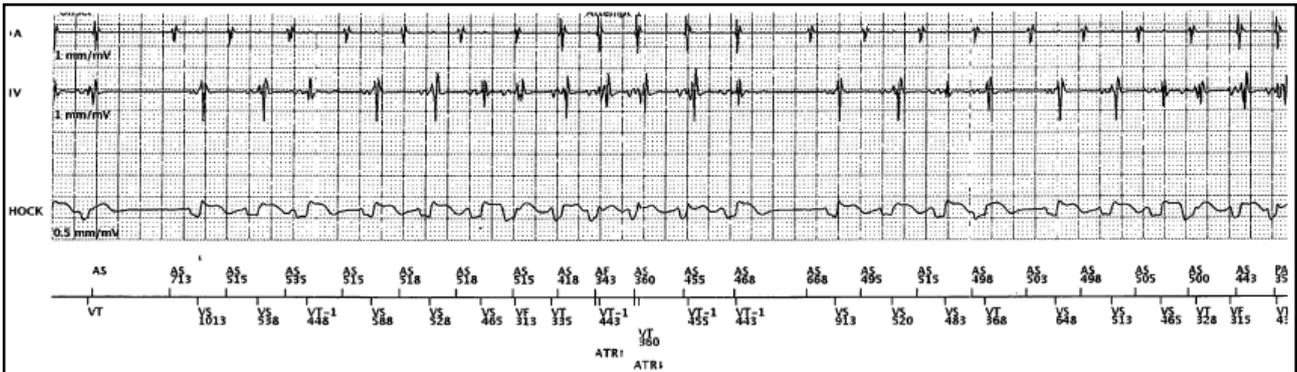
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2868 Software Version: 3.04  
F143 Firmware  
Version: B\_v1.02.00(3.01)

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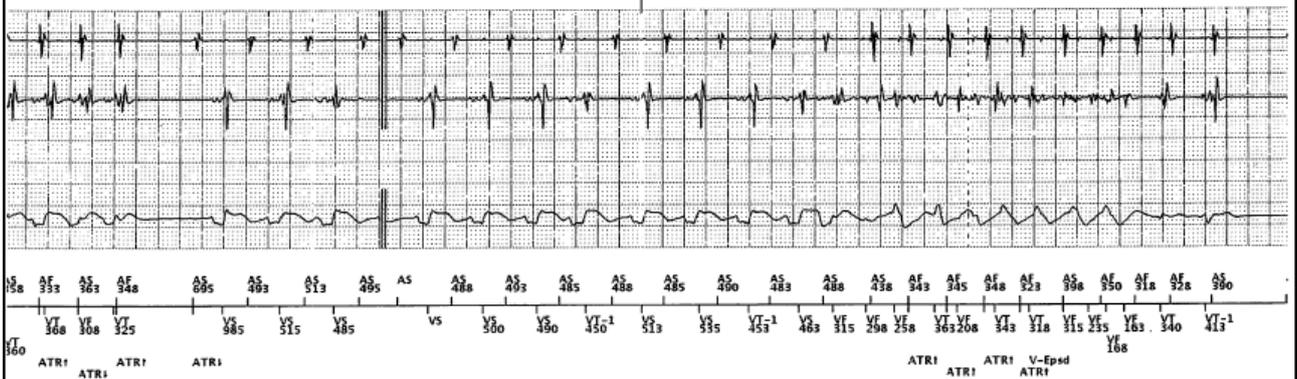
Clinician Signature: \_\_\_\_\_

Episode1 ATPx1 41J 41J



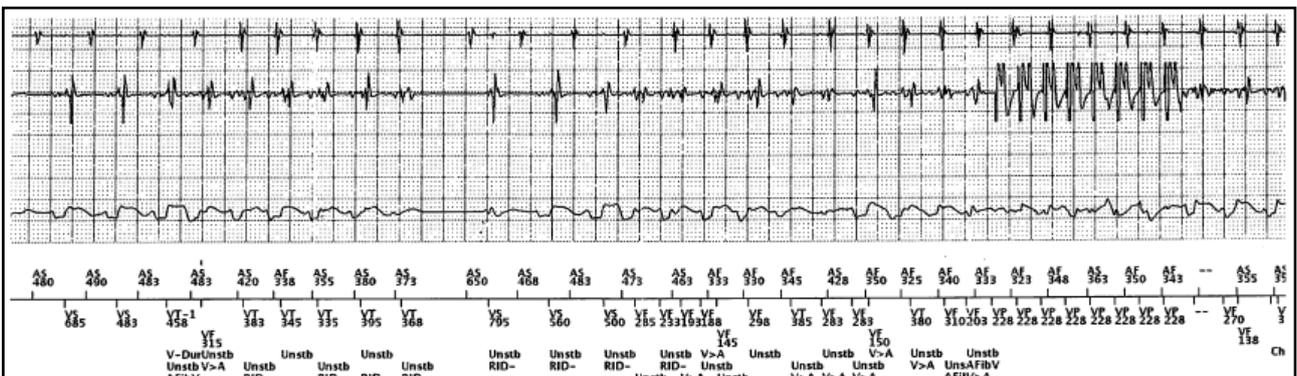
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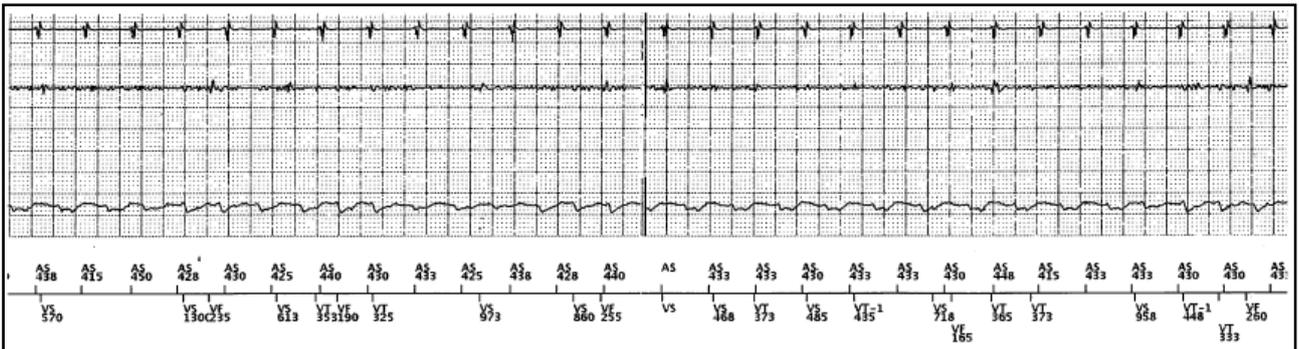


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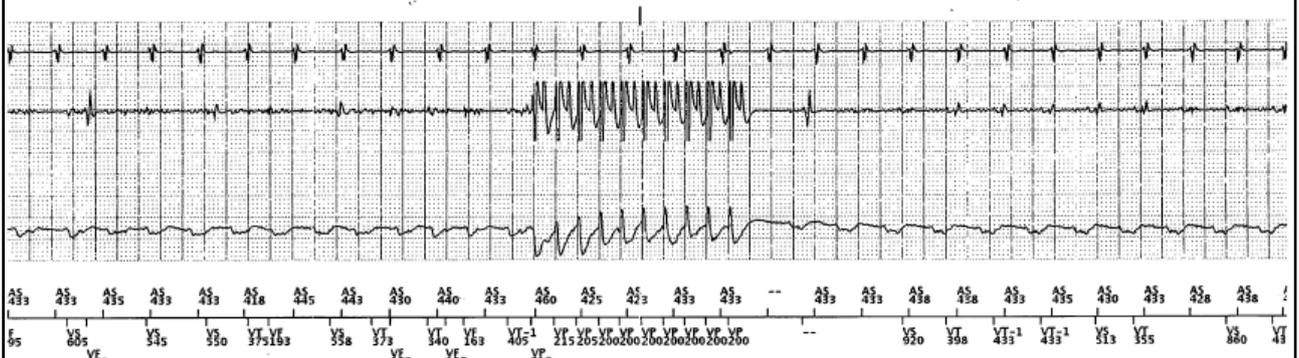


Episode2 ATPx6 41J 41J 41Jx3



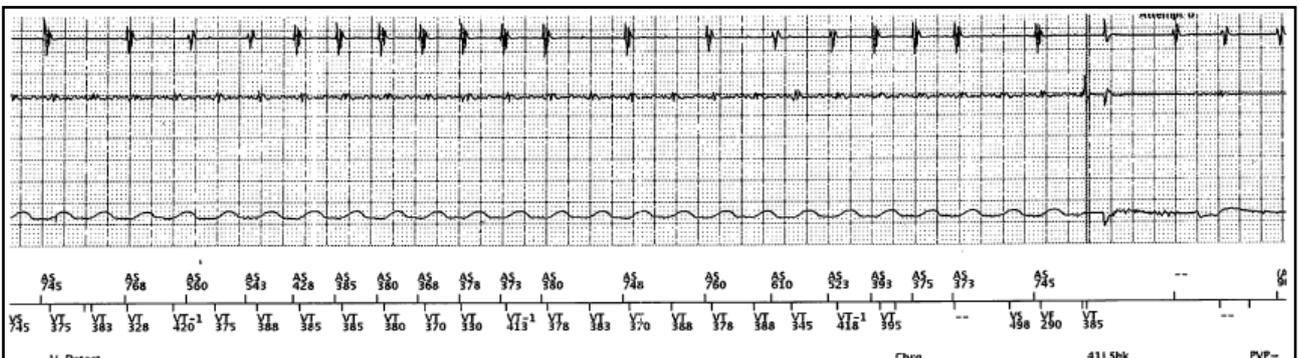
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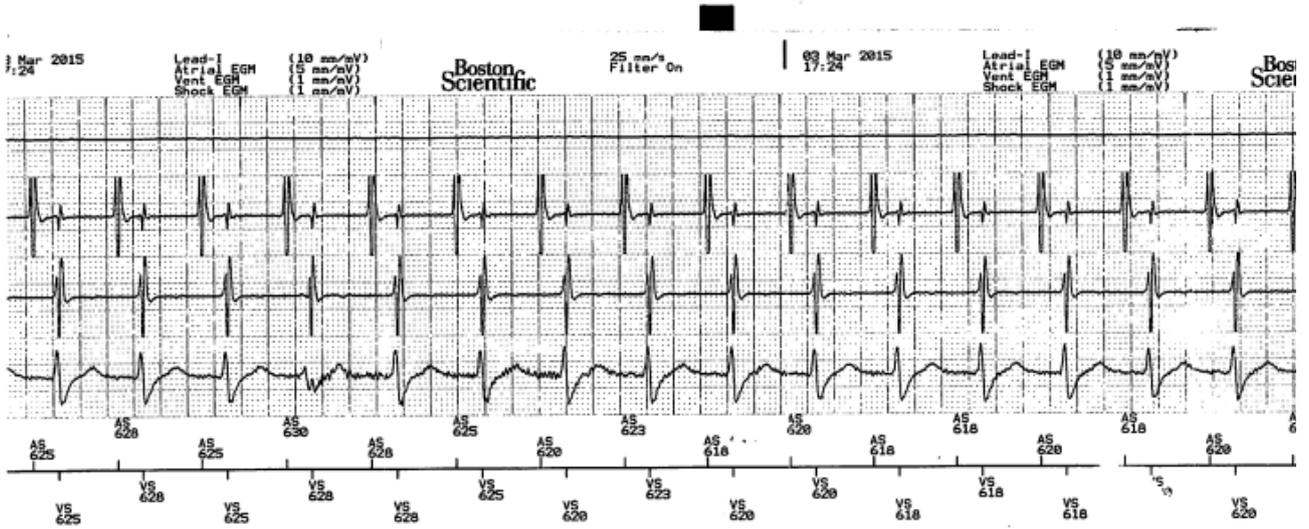


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## SINUS時の波形



## 胸部レントゲン

